

## Claims

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

4. A method for inspecting channel pipes, wherein hemispherical or fully spherical digital images recorded at specific locations in the pipe are calculated and perspective images enabling virtual swiveling are produced, the method comprising:

taking a known geometry of an imaged pipe from an image data at one location;

calculating and representing an intermediate image for a random neighboring location of a desired fictive camera position;

projecting a recorded image computationally onto the known pipe geometry; and

calculating a perspective image data resulting therefrom for a neighboring location.

5. The method according to Claim 4, wherein calculating at each image point of a 2D-fisheye image  $P'$  ( $X_f$ ,  $Y_f$ ) with known imaging function, the angle of incidence ( $\alpha$ ,  $\theta$ ) of the spherical coordinates, and from the calculation a corresponding image point in 3D space  $P$  ( $X_r$ ,  $Y_r$ ,  $Z_r$ ) on the pipe surface is represented.

6. The method according to Claim 4, wherein calculating from the desired fictive camera position and its viewing angle in space, an image point located in a desired section of an image plane, and taking from image point coordinates  $(X_b, Y_b)$  of the image plane and assuming a projection center at a distance  $F$  from the image plane  $B$ , calculating corresponding image point coordinates  $(X_r, Y_r, Z_r)$  on the inner surface of the known pipe geometry and corresponding image point coordinates  $(X_f, Y_f)$  of a fisheye image, so that the color and brightness value of an image point on image plane  $B$  with  $P'' (X_b, Y_b) = P (X_f, Y_f)$  is obtained.